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Wahrnehmungen der Lehrkräfte von curricularen Veränderungen und ihre Verwendung der Schulbücher während der Implementierung: Der aktuelle Forschungsstand

Tomáš Janko ✉, **Karolína Pešková**

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Abstract

Curriculum change and its implementation into school instruction represent a complex process which has to be founded in a well-designed plan and supported by material and non-material factors in order to succeed. Key factors for successfully implementing a curriculum change include teachers and their attitudes, which may vary according to the sociocultural context. Textbooks are also an important factor among the frameworks and mechanisms that seek to guide curriculum change. In comparison to other factors, textbooks are more evident. The purpose of this study is to review the state of the art related to research on teacher perceptions of curriculum changes. The review is aimed primarily at the research findings and secondarily at the methodological aspects of studies examining this issue. Special focus is placed on the role of school textbooks as curriculum materials supporting the curriculum change implementation. In the review, 37 resources published between 2000 and 2015 were analysed. Twelve of the sources were related to the topic of teachers' use of textbooks during curriculum change implementation. The results of the review suggest that teacher perceptions of curriculum changes are not uniform, but vary between positions of acceptance and resistance. Teachers' demographical characteristics (e.g. gender, years of teaching practice) and the perceived constraints of the implementation were identified as the factors most influencing stances towards the curriculum changes. It was also found that textbooks are still perceived as a key curricular (and instructional) tool by teachers. Teachers' lack of pedagogical content knowledge was the most restraining factor in their use of textbooks during the implementation of the renewed curricula. The review concludes with suggestions for further research on teachers' perceptions towards curriculum changes and their use of textbooks during this process.

Schlüsselwörter: curriculum reform, teacher perceptions, textbooks, review

Abstract

Curriculare Veränderungen (Reformen) und ihre Implementierung in der Schulpraxis stellen einen komplexen Prozess dar. Damit dieser Prozess erfolgreich ist, muss er auf einem gut durchdachten Plan basieren und von materiellen und immateriellen Faktoren unterstützt werden. Die Schlüsselfaktoren für eine erfolgreiche Implementierung der curricularen Veränderungen umfassen Lehrkräfte und ihre Einstellungen, die (wiederum) vom soziokulturellen Kontext verändern können. Schulbücher sind neben den Rahmen und Mechanismen, die die curricularen Veränderungen leiten ebenfalls ein wichtiger Faktor. Im Vergleich zu anderen Faktoren sind die Schulbücher aber deutlich sichtbar. Das Ziel der Studie ist es den Forschungsstand bezüglich der Wahrnehmung der Implementierung der curricularen Veränderungen durch Lehrkräfte zusammenzufassen. Die Studie fokussiert primär auf Forschungsergebnisse aber auch teilweise auf methodologische Aspekte der ausgewählten Studien. Ein besonderer Fokus liegt auf der Rolle der Schulbücher als Curriculum unterstützendes Materials. Im Rahmen der Studie wurden 37 Quellen analysiert, die zwischen 2000 und 2015 publiziert wurden. Zwölf dieser Quellen betrafen das Thema der Schulbuchverwendung durch Lehrkräfte während der Implementierung der curricularen Veränderungen. Die Ergebnisse der Studie deuten an, dass die Wahrnehmungen der Lehrkräfte nicht einheitlich sind, sondern sie variieren von Akzeptanz bis Resistenz. Die demographischen Charakteristika der Lehrkräfte (z.B. Geschlecht, Dienstjahre) und die wahrgenommenen Barrieren der Implementierung wurden als die wichtigsten Faktoren ausgewertet, die die Wahrnehmungen der curricularen Veränderungen beeinflussen. Weiter wurde festgestellt, dass Schulbücher immer noch als grundlegende Curriculum- und Unterrichtsmittel von Lehrkräften wahrgenommen werden. Der Mangel der Lehrkräfte an fachdidaktischem Wissen war der stärkste Faktor, der die Schulbuchverwendung während der Implementierung des neuen Curriculums hemmt. Abschließend werden Vorschläge für weitere Forschung zum Thema der Wahrnehmungen der curricularen Veränderungen und der Schulbuchverwendung während dieses Prozesses angeboten.

Keywords: curriculare Veränderungen, Wahrnehmungen der Lehrkräfte, Schulbücher, Forschungsstand

Autoren: Tomáš Janko | Masaryk Universität | janko@ped.muni.cz

Karolína Pešková | Masaryk Universität | peskova@ped.muni.cz

1 Introduction

Curriculum changes often raise high expectations because they bring in innovative approaches in terms of the development of education. Implementation of reformatory visions is not always straightforward. The positive influence of proposed changes, thus, may not be evident immediately in school instruction or in pupil learning (HANDAL & HERRINGTON, 2003). Teachers and their experience are central to any attempt at curriculum change (cf. HOPMANN, 2003). The manner in which teachers perceive curriculum change is crucial because it underlies their efforts within the reform process. According to KIRK and McDONALD (2001), teachers' interpretations of the curriculum change influence their efforts and, thus, may determine the reformatory process as a whole (PARK & SUNG, 2013). It would be inaccurate to assume that teachers deal with suggested curriculum changes exactly as they were intended by curriculum developers. In contrast, their stances are affected by various factors and may, thus, develop over time or according to the particular phase of the curriculum change (REMILLARD, 2005).

In dealing with curriculum change within school instruction, teachers often need to renew their professional knowledge as well as instructional practices (WALLACE & LOUDEN, 1998). When deciding which of the curriculum elements are important and worth teaching, teachers often seek support and guidance (FREEMAN et al., 1983). Textbooks represent a sound means through which

curriculum change manifests in a manner that is more manageable for teachers (GRANT, KLINE & WEINHOLD, 2002). Through the use of textbooks, the curriculum change may become more concrete and understandable. Despite the influence of textbooks, however, we have only a limited understanding of how teachers interact with them when it comes to implementing curriculum changes.

The present study seeks to elaborate on the research on teacher perceptions of curriculum changes by summarizing its state of the art. More concretely, the study aims to describe the factors that influence teachers' stances towards changes of curriculum. In contrast to previous reviews which have dealt with the issue of implementation from a general perspective (e.g. DESIMONE, 2002; DURLAK & DUPRE, 2008) or with specific curriculum use only (REMILLARD, 2005; MAUGHAN, SMITH & HAMER, 2015), this study primarily focuses on textbooks and their use as curriculum material supporting curriculum change implementation. First, the theoretical framework of the study is presented, describing the issue of curriculum change implementation in a general manner and considering the roles of teachers within this complex process. Next, the significance of textbooks as curriculum material is explained. The theoretical background is followed by a description of the applied methodology of the study and the presentation of the main results as well as recommendations for further research.

2 Theoretical Background

In a broader context, a proclamation of curriculum change may be interpreted as an effort to solve particular problems of a social system (GUNDEM, 1996). More specifically, the introduction of a curriculum change often implies a need for improvement in terms of the quality of education, i.e. new educational conceptions and approaches or the professionalism of teachers (FULLAN, 1996). In some cases, the introduction of a curriculum change may be seen as a way to solve the problems of the educational system by increasing its modernization (cf. CHERRYHOLMES, 2005). In this chapter, we focus on the issue of the curriculum change implementation, teachers as its key actors, and textbooks as tools supporting the implementation.

2.1 Curriculum Change and its Implementation

The process of curriculum change is influenced by various factors (e.g. local context, policy, administration, and organization) and comprises distinctive phases (planning, implementation, realization, and attainment), which are related to restoring, improving, or removing specific conditions within an educational system (CHERRYHOLMES, 2005). According to MARKEE (1997), the propulsion of curriculum change should be seen as a tension between three dimensions: shifts in pedagogical values, improvements in didactic skills, and innovations in teaching materials.

Basically, curriculum change may happen in two ways. On the one hand, there are changes coming from educational policy and aiming towards the centralization of

the educational system. On the other hand, there are changes which evolve under the initiative of schools and teaching staff and seek to decentralize the decision-making process around educational content and aims. In this paper, we focus on the latter group of educational changes, which are meant to encourage schools to develop their own curriculum profile (based on the state curriculum framework), which would allow them to decide both on the content and its delivery (timeframe and pedagogy) (cf. STIBBE, 2005).

In order for curriculum change to be effective, it has to be introduced effectively into school practice. This refers to the state when the changes of curriculum are accepted and commonly employed. However, despite promising expectations, the impact of curriculum change on school practice falls behind the initial expectations. A decisive factor in the successful implementation of a curriculum change is the perception and evaluation of the proposed changes by teachers, both in cognitive and affective terms.

2.2 Teachers as Key Actors in Curriculum Change Implementation

From an actor-oriented perspective, a change of curriculum is a subjective process, because it is based primarily on differentiated interpretations of situations and events, as individuals construct personal meanings conforming to their experience (FULLAN, 1991; FULLAN, 2007). Similarly, HARGREAVES (1989) states that curriculum change should

be regarded as a change in the teacher who delivers the curriculum at the classroom level. CRAIG (2009) considers teachers as key actors in curriculum change because of their primacy in linking the curriculum with their students, the educational conditions at a particular school as well as their own pedagogies. Some authors even state that teachers need to be involved in the process of curriculum change because then they become more eager promoters of the implementation (LITTLE, 1993; SPILLANE, 1999).

Teachers' perceptions of curriculum change are underpinned by their personal identity and interpretative framework and usually come out as reasons for or against the change (VÄHÄSANTANEN & ETELÄPELTO, 2011). As such, teachers' perceptions and engagement towards curriculum change can be located on the continuum between acceptance and resistance. A position of acceptance can be defined as a positive stance and support for the changes, albeit influenced by various variables inherent to the school (e.g. aims of the curriculum change, quality of management, institutional and personal conditions in the school, and perceived amount of support in terms of implementation). Resistance could be characterized as a negative stance towards change, even though it may often serve a

constructive purpose (GITLIN & MARGONIS, 1995).

Most teachers assume that the innovated curriculum will serve as a point of reference within the rather turbulent times of curriculum change, but at the same time they make alterations according to their own meanings, which are based on their knowledge, beliefs, and preconceptions (WALLACE & LOUDEN, 1998; KÜNZLI & SANTINI-AMGARTEN, 1999). Teachers may struggle when creating coherent and effective alterations of the innovated curriculum and therefore seek support and guidance while deciding which curriculum innovations are important and worthy (FREEMAN et al., 1983; GRANT, KLINE & WEINHOLD, 2002). The level of support offered to teachers when implementing new curriculum may, therefore, underlie teachers' efforts and as a consequence contribute to positive (or negative) developments in the curriculum change implementation (BALL & COHEN, 1996; SCHNEIDER, KRAJCIK & MARX, 2000). Teacher interactions with curriculum materials fall into different categories, such as replication, application, interpretation, and construction (cf. LOUDEN, 1991; PRAWAT, 1992; ERAUT, 1994), and they involve different types of curriculum use (BROWN, 2009).

2.3 Textbooks as Tools Supporting the Process of Curriculum Change Implementation

According to research carried out in many countries, school textbooks and their use during instruction seems to be one of the most effective ways to demonstrate the innovated curriculum (cf. SMITH, 2006). The

textbooks are effective in disseminating and shaping the innovated curriculum because they reflect the newly defined educational content and deploy it clearly by sequencing it into particular grades of

school instruction (cf. VENEZKY, 1992; NICOL & CRESPO, 2006). Unlike the frameworks and other mechanisms guiding teacher efforts to implement curriculum change, textbooks are a natural part of the school routine. The contributions of the textbooks, therefore, can be identified at each level of the curriculum change and its implementation (see FIG 1). At the level of educational goals, the textbooks and their adoption process may be seen as a strategy for securing periodic updates of the curriculum (BALL & COHEN, 1996). Concurrently, in relation to an intended curriculum, the textbooks participate in

planning and organizing innovated curriculum in particular grades by providing sets of knowledge and activities through which the proposed curriculum aims can be achieved (ORNSTEIN, 1994; GIVENS & BARLEX, 2001). In terms of the enacted and realized curriculum, the textbooks can serve various instructional functions. For example, they bind the curricular content of different fields and transform it into more comprehensible information for both pupils and teachers. The textbooks also divide curricular content into more manageable units to be taught in particular grades and school subjects.

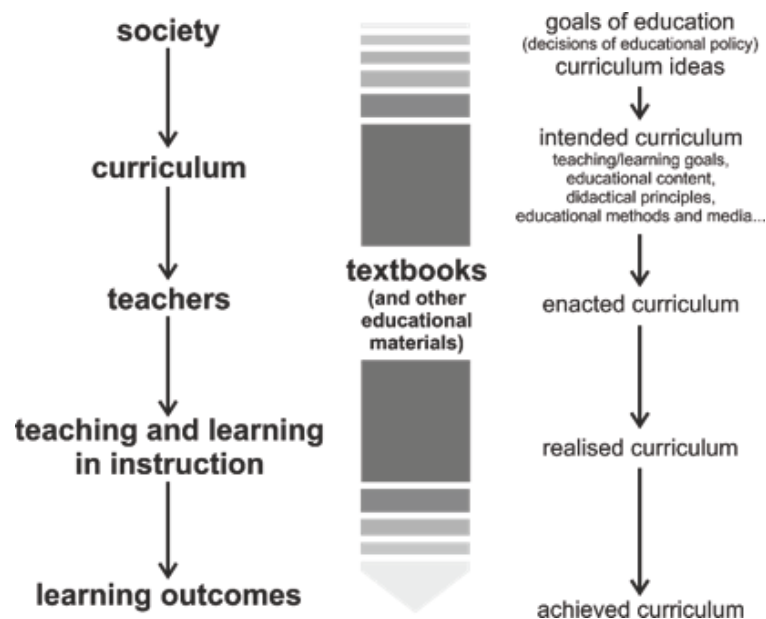


FIG 1 Significance of textbooks at various stages of curriculum development

(Source: KÜNZLI et al., 2013, 21; modified)

They can also be employed to coordinate the deployment of other educational media (e.g. ICT, e-learning, audio, and outer-school printed materials). At the level of achieved curriculum, the textbooks may motivate pupils and facilitate their integration of

information from various sources into more consolidated knowledge. In today's world, textbooks are also important for ensuring the harmonious development of pupils' personalities and attitudes.

3 Methods

3.1 Research Aim and Research Questions

The purpose of this study was to review the state of the art related to research on teacher perceptions towards the curriculum change. In a more detailed context, our attention was directed to the role of school textbooks as curriculum materials supporting the implementation of curriculum change. The review focused primarily on the research findings, while the methodological aspects of studies examining this issue were of rather secondary importance. The following research questions stemmed from these aims:

- 1) How do teachers perceive curriculum change and which factors influence their perceptions?
- 2) What is the role of textbooks within the curriculum change implementation and how do teachers use them?
- 3) What main methodological approaches are applied in researching both issues?

We consider these research questions to be interrelated because, with a view of practical implications, they enable us to deal with teacher concerns about curriculum change as well as a teacher needs for support during the implementation process at a more detailed level.

3.2 Data Sources and Research Procedure

The study was designed as an integrative review (WHITTEMORE & KNAFL, 2005) with the purpose of synthesizing the state of the art of research on teachers' perceptions of curriculum change and their use of school textbooks as curriculum materials. According to the taxonomy of the relevant sources (CRESWELL, 2014), empirical studies were the primary focus of our study. Other types of sources (theoretical works, dissertations, and popular science books) were considered only if they conveyed relevant findings. To find the relevant works, we focused on international publishing databases which we perceived as reliable and effective reservoirs of knowledge (e.g. EBSO, ERIC, SCOPUS, JSTOR, WoS, ProQuest, SAGE Journals, Fachportal Pädagogik, and Google Scholar). The time period was set to include sources published between 2000–2015. This was due to our research aim to provide a representative overview of the current knowledge related to the research issue. The span was also influenced by our effort to present an international perspective in the review by including empirical studies carried out in different regions and at different times. Thereby, we searched for the concepts

curriculum change, curriculum reform, teachers' attitudes, perception, acceptance, resistance, textbook, and fidelity in the titles, abstracts, and keywords of studies. Studies published in English, German, and Czech were analysed. Based on the search criteria, a total of 54 sources were identified. Considering

the validity of the sources and their relevance to the research issue as inclusion criteria, 37 studies were finally analysed in our review study (12 were related to the issue of textbook use during the process of curriculum change implementation).

4 Findings

4.1 Research on Teachers' Perception of Curriculum Change

This chapter presents current research on teachers' perceptions of curriculum change. Because of the variety of the findings, special focus is placed on the factors influencing these perceptions. First, we introduce studies discovering reasons for the acceptance of the curriculum change; then we pay attention to studies where demographic variables significantly influenced teacher perception, we describe organizational factors, and finally we examine the barriers, difficulties, and emotions affecting the perception.

Research on the perception of curriculum change includes studies dealing with the acceptance of new curriculum documents and the acceptance of the implementation process itself. Focusing on the evaluation of new curriculum documents, ROGGENBRODT (2008) revealed positive attitudes towards innovated curriculum documents in Germany. A high extent of autonomy for schools and teachers was perceived as an important reason for curriculum change acceptance. Similarly, JANÍK et al. (2011) investigated the perception of a new Czech curriculum document and its implementation. Their results show that teachers valued a clear characterization of educational objectives

along with the accurate specification of educational content and expected outcomes when accepting the new curriculum document. Familiarity with the principles of the curriculum change was another factor affecting curriculum change acceptance as teachers who were not yet familiar with the principles of the curriculum change tended to refuse it more vigorously (cf. BEER, 2007; KARAKHANYAN, VAN VEEN & BERGEN, 2011; REICHMANN & ARTZI, 2012).

With deeper insight into the perceptions of curriculum implementation, REKKOR, ÜMARİK and LOOGMA (2013) dealt with Estonian teachers' perceptions and their involvement in the curriculum development and implementation process and analysed five types of teachers in terms of their willingness to implement the curriculum: enthusiastic innovators, constructive-critical innovators, normative adopters, norm ignorers, and bitterly disappointed (cf. DATNOW & CASTELLANO, 2000; DILKES, CUNNINGHAM & GRAY, 2014). The teachers tended to attribute different meanings to the national curriculum ranging from seeing the curriculum as facilitating their work (enthusiastic innovators and constructive-critical innovators) to

perceiving it as restricting and complicating it (norm ignorers and bitterly disappointed). Differences in the perceptions of the curriculum were identified among teachers from different vocational fields; the teachers in technical fields tended to be the most critical of the curriculum.

STRAKOVÁ (2007) found that Czech teachers who were previously satisfied with their work tended to accept curriculum change. However, only a minority of all teachers were willing to actively participate in the development of their school curriculum. Teachers with less teaching experience perceived responsibility for curriculum development more positively than other teachers. Demographic variables proved to be a significant factor influencing the perception of curriculum change in other studies as well. For instance, the length of professional experience played a significant role in a study by TŮMOVÁ (2012), who discovered that Czech teachers with more teaching experience tended to be more pessimistic about the benefits of change (see also DATNOW & CASTELLANO, 2000; SMIT, 2005; ROGGENBRODT, 2008; DILKES, CUNNINGHAM & GRAY, 2014). More concretely focused on the reasons for curriculum change acceptance, ERBAS and ULUBAY (2008) found that Turkish teachers with more teaching experience (over 21 years) associated the implementation of the curriculum change predominately with innovations in the learning-teaching process and with improvements in the use of instructional materials. In contrast, teachers with less teaching experience (6 – 20 years) focused on improvements in evaluation techniques during the implementation of the change. According to findings by JANÍK et al. (2010), the respondents' position

in the school proved to be a significant demographic variable, as members of the school management (head teachers and deputy head teachers) appreciated the Czech curriculum change more than regular teachers did (cf. ROGGENBRODT, 2008).

Concerning the organizational and management aspects of the implementation, GERMETEN (2011) aimed to answer the question of how principals of Norwegian schools value school reform, indicating some barriers that they had to face during the implementation, e.g. barriers to administration, leadership, and provision of learning opportunities for children, as well as insufficient support for principals at the local and regional levels. Organizational factors, such as timing and scale of implementation activities, planning, and distribution of workload, predicted Hong Kong teachers' behavioural intentions towards promoting the new curriculum. LEE (2000) found that in addition to the organizational factors, the perceived non-monetary cost-benefit of implementing the curriculum, perceived practicality, and perceived support coming from both school and other sources shape teachers' receptivity to the curriculum change. Teachers' low receptivity (their resistance) was not only considered a matter of insufficient school and outside assistance, but also of the excessive workload they had to manage.

ALSHAMMARI (2013) concluded on the grounds of a study carried out in Kuwait that work overload was one of the significant constraints of implementation. Lack of teaching time and teaching tools were considered to be the other main difficulties that teachers had to face when teaching new curricula. Similarly, Korean teachers who participated in the study by PARK and

SUNG (2013) showed rather negative and unconstructive attitudes along with a lack of enthusiasm and motivation to implement curriculum change, especially because of the intensification of their workload without the introduction of significant benefit for their teaching practice. Although some teachers believed that the curriculum change might lead to some improvements, they claimed to experience dilemmas and tensions in its implementation (e.g. lack of in-service programmes for teachers and cultural constraints).

BANTWINI (2010) showed that a new South African curriculum was viewed as a burden and a work overload for teachers, which led to limited or no implementation of the curriculum in classrooms. In addition, teachers' previous work experience, their lack of understanding of the curriculum change, and a lack of ongoing professional development were viewed as barriers to curriculum implementation. Similarly, for Chinese teachers in the study by LAI (2010), it was difficult to understand and implement the curriculum change. Short-term teacher training and school-based teacher development were only of a limited help for the teachers.

BERAN, MARÉS and JEŽEK (2007) focused on the problematic issues of new Czech school curriculum documents. Among the teachers' biggest difficulties were concerns about "coping with all of that", i.e. all of the problematic aspects connected with implementing the curriculum (work overload, lack of time, new organisation processes at school, etc.). Based on their research results, the researchers emphasized the need for further teacher education and professional development.

When identifying and analysing the reasons teacher fatigue might occur when

implementing a new national curriculum in Australia, DILKES, CUNNINGHAM and GRAY (2014) highlighted collaboration as contributing to the teachers' coping strategies for implementing the mandated curriculum change (helping prevent burnout, change fatigue, and other disposition problems). In addition, the hope that the new curriculum would bring improvement was an underlying factor in all of the teachers' data sets. In contrast, in a study by CHARALAMBOUS and PHILIPPOU (2010), teachers' efficacy beliefs were found to influence their concerns about implementing a Cypriot national curriculum, particularly in terms of instructional management and consequences for pupil learning. A similar study of teacher concerns conducted by KWOK (2014) suggested that teachers perceived the curriculum change in Hong Kong as a possible threat to their professional identity and job security. Contextual factors (school administration, the nature of innovation, and culture) had a significant effect on personal feelings and perceptions of the change.

Teachers' concerns and barriers to curriculum implementation from an emotional point of view were researched in a study by TROUDI and ALWAN (2010), who noted teachers' contradictory affective reactions to curriculum change in the United Arab Emirates. Their feelings became more positive with time as they became familiar with the new curriculum. With deeper insight into the emotional experience of a teacher, VAN VEEN, SLEEGERS and VAN DE VEN (2005) described anxiety, anger, guilt, and shame as emotions resulting in a loss of enthusiasm about a curriculum change in the Netherlands. According to VAN VEEN and SLEEGERS (2006), negative emotions about the curriculum

change were expressed by teachers who appraised the change as incongruent with their professional orientations.

The reviewed research findings described in this chapter appear to have several intersectional points. Some of the factors that were discovered as influencing teachers' perceptions of curriculum change (especially teachers' work overload and other implementation constraints) are common among the studies. The studies approached the issue by identifying correlations among the researched variables, defining the main types of teachers in relation to their attitudes towards the change or exploring and suggesting new practical challenges for further development of the curriculum change. Three methodological tendencies were identified in the body of the research. Most of the studies used a mixed methodology (e.g. LEE, 2000; CHARALAMBOUS & PHILIPPOU, 2010; GERMETEN, 2011) or were based on one type of data collection: questionnaires (e.g. STRAKOVÁ, 2007; LOEB, KNAPP & ELFERS, 2008; ERBAS & ULUBAY, 2008) or semi-structured interviews (e.g. VAN

VEEN & SLEEGERS, 2006; KARAKHANYAN, VAN VEEN & BERGEN, 2011; PARK & SUNG, 2013; REKKOR, ÜMARİK, & LOOGMA, 2013; DILKES, CUNNINGHAM & GRAY, 2014).

Most studies dealt with the evaluation of curriculum change from the teachers' perspective with a short-term focus. There was a lack of studies looking at teachers' points of view with emotional distance, which could uncover durable implementation constraints affecting the school reality. In addition, the perceptions were frequently researched only from a single perspective (be it cognitive, behavioural, or affective), less often based on their combination. There was also a lack of studies analysing teachers' perceptions of curriculum change from an internationally comparative point of view or from a temporal perspective (e.g. how teachers' perceptions develop in later phases of the curriculum change). Such studies would contribute to a deeper understanding of how to effectively implement proposed curriculum changes.

4.2 The Role of Textbooks within the Process of Teachers' Implementation of Curriculum Change

Based on the preferred curriculum approach, it is possible to distinguish three types of teachers: those who focus on content transmission (fidelity approach), those who undertake curriculum adjustments (adaptation approach), and those who create curriculum in action according to student experience (enactment approach; SNYDER, BOLIN & ZUMWALT, 1992). Each approach has a different impact on the use of textbooks by individual teachers. With this presupposition in mind, the studies presented below

describe research a) on the classroom events based on the use of textbooks in relation to curriculum change goals, and b) on the perception of the role of textbooks within the curriculum change. Textbooks are here considered as printed and electronic course books, workbooks, or worksheets; teacher guides are a set of curriculum materials used for teaching at the corresponding level of education (cf. SHAWER, 2010).

SCHNEIDER, KRAJCIK and BLUMENFELD (2005) examined US teachers' interactions with

students when using new inquiry-based science textbooks (reform-based curriculum materials) including materials for teachers and activities for students. Two of the four observed teachers used the textbooks purposefully and consistently to guide their enactment; the other two were less reflective of the intended enactment. The results indicated that the curriculum materials were most beneficial for teachers when the lesson descriptions were detailed and the support for teacher thinking was lesson-specific and consistent throughout. Based on their results, the authors suggest that further professional development is needed to plan for and reflect on classroom enactments. The authors also stated that the study only initially addressed the issue; it did not explicitly explore teacher learning or connect aspects of teacher enactments to specific features of the textbooks.

The teachers' professional development perspective was the main focus of a study by REMILLARD (2000), who observed two US elementary teachers and analysed the relationship between their use of a reform-oriented mathematics textbook and their learning and teaching. REMILLARD (2000) concluded that using textbooks to control lessons raised practical (instructional) and theoretical (curricular) questions and, thus, stimulated teachers to improve their skills and practices. Moreover, textbooks offered teachers various opportunities for learning.

STARÁ and KRĚMÁŘOVÁ (2014) found that teachers perceived textbooks developed according to the new Czech curriculum as a source of content knowledge and pedagogical content knowledge (PCK). The teachers viewed the textbook (for learning

science) as a source of didactic suggestions which might be used differently than intended by the textbook authors. In general, the teachers perceived textbooks as a key source for curriculum planning, but they differed in how they adapted the actual textbook, which they did according to their own preferences. When using textbooks, they preferred teaching autonomy as they made decisions about the teaching content according to their own experience rather than the suggestions contained in the curriculum documents.

Similar approaches to textbook use by teachers were found by McNAUGHT, Tarr and SEARS (2010) who reported findings of US teachers' implementations of mathematics textbooks over a three-year period (through textbook-use diaries and indications of the level of fidelity in the table of contents). According to the results, teachers most frequently used textbooks for teaching content, or in other cases used textbooks with some supplementation. The contents of the lessons were primarily attributable to the textbooks; however, the manner in which the lessons were taught was less consistent with the authors' expectation. These findings are comparable with the results provided by TAYLOR (2013), who examined US secondary mathematics teachers' use of curriculum materials from a longitudinal perspective. A multiple case study approach was used in order to engage teachers in discussions of materials they had assessed, adapted, and used with students. The results showed that teachers adapted the materials rather than used them as they were, with a growing tendency to supplement, replace, and reflect the materials over time.

A long-term perspective was applied by MANOUCHEHRI and GOODMAN (2000), who explored what professional factors tend to motivate or discourage the use of a new textbook by teachers and how teachers judge the new US Standards-based mathematics textbook and its value for their practice. As in other studies, the results revealed content knowledge and PCK as the factors with the greatest influence on teachers' evaluation and use of textbooks. The personal experience of two middle school teachers with instructional practices shaped their judgment of the curricula and their assessment of their value for instruction: one teacher was student-centred, focused on affective variables related to teaching and was sometimes reluctant to use the textbook; the other teacher focused more on developing students' cognition and found the textbook useful.

Similar conclusions were drawn by SCHNEIDER and KRAJCIK (2002), who addressed the question of how teachers use and understand new science curriculum materials (teachers' materials and students' worksheets) and how their classroom practices change when they use them. It was found that each (US) teacher had used the materials differently and demonstrated different levels of understanding of the content and PCK. However, all of them struggled with more complex ideas. Those who used educative features in the materials were more successful in putting the curriculum into practice. Teachers used the materials most frequently for lesson planning. In relation to the results, the authors suggest that broader areas of teacher knowledge should be addressed in professional development outside of the classroom.

GRANT, KLINE and WEINHOLD (2002)

focused on what aspects of the US reform mathematics textbooks teachers consider as they decide what they will enact in the classroom. Within two surveys, teachers were first asked to analyse one module of a new mathematics textbook and then to implement the textbook over time. The teachers' years of experience had no influence on the choices they made during the curriculum implementation. The information provided for teachers in the textbook (notes on the content for the teachers and dialogue boxes with examples of classroom discussions of the content) were considered useful by the teachers. The mathematics content, ways of thinking that students might display, and pedagogical support built the teachers' main rationales for using the textbook.

A closer look at teachers' curriculum design expertise was provided by HUIZINGA, HANDELZALTS, NIEVEEN and VOOGT (2014). Dutch teachers and facilitators (supporting teacher design teams) reflected in interviews on a school-specific collaborative design process (designing their own digital materials, textbooks, projects, etc. for various subjects). Several problems of the design process were revealed: low awareness about curriculum design, insufficient curriculum consistency expertise, and insufficient PCK.

The relationship between teachers' chosen modes of using a set of textbooks and their own perceptions of the textbooks' added value to their teaching was described by GIVENS and BARLEW (2001). The results of their survey conducted in Great Britain indicated that most teachers were prepared to try all of the materials, and found some added value in each component in terms of the quality of learning activities, professional satisfaction, effectiveness, and the extent

of pupil autonomy. However, they were selective when using different parts of the materials. Despite not having the biggest impact on the perceived added value, the student's book was the most widely used component.

Several studies dealt with perceptions of textbooks developed on the grounds of the reformed curriculum. For example, a survey by RODRÍGUEZ and MESA (2012) was aimed at perceptions of Spanish primary school teachers concerning new textbooks and printed curriculum materials developed to support their teaching activities in the context of curriculum change. The results showed that teachers did not perceive important changes in terms of the content of new textbooks compared to the textbooks used before the curriculum change. Only half of the teachers reported that the textbooks responded to the need for comprehensive teaching. In addition, the results indicated scant professional support when utilising the new textbooks and limited use of evaluation guides when selecting textbooks. VAN CANH (2008) extended the research on teachers' perceptions of new textbooks with a socio-cultural perspective. He explored Vietnamese teachers' perceptions and self-reported implementation of new English textbooks in the context of a curriculum change. The participants expressed a positive attitude towards the new textbook; however, the success of the implementation was connected with socio-cultural factors (teachers' and students' motivation and beliefs) rather than with the textbook. A discrepancy in conceptual interpretations (concerning learner-centred communicative language teaching) of the textbook was found between teachers and textbook

writers. Concerning the self-reported implementation, CANH (2008) revealed contradictions in teachers' stated beliefs, as teachers taught with the new textbook in their accustomed way, which did not correspond with the beliefs they expressed about the textbook.

Most of the presented studies emphasized the need for teachers' further professional development in relation to the textbook-based curriculum enactment as the teachers' knowledge of subject matter, their pedagogical skills, and their PCK play significant roles in how they assess and implement new textbooks. However, concrete recommendations connecting aspects of teachers' enactments to specific features of the textbooks based on concrete teacher requirements for improvement and support for their implementation of new curriculum based textbooks were missing in the reviewed studies.

The methodology used in these enactment studies implies a prevailing qualitative approach, i.e. observations of teacher practices (e.g. SCHNEIDER, KRAJCIK & BLUMENFELD, 2005), interviews exploring the nature of their decisions (e.g. HUIZINGA, HANDELZALTS, NIEVEEN & VOOGT, 2014), and data triangulation (e.g. MANOUCHEHRI & GOODMAN, 2000; STARÁ & KRČMÁŘOVÁ, 2013). Many studies are built on a constructivist theoretical perspective investigating both teachers' thinking (based on their knowledge about teaching and curriculum and on experiences in the classroom) and their teaching practices (e.g. MANOUCHEHRI & GOODMAN, 2000). However, the main research focus on textbook use varies, aiming at the extent of textbook adaptation, at professional factors influencing textbook use, at the benefits of the innovated

textbooks, and teachers' perceptions and understanding of the textbook content. A long-term perspective was often applied, which enabled observations of changes in

the respondents' views, and thus had greater potential for uncovering the actual enactment and more stable perceptions over time.

5 Conclusions

This study focused on the analysis of teachers' perception of curriculum change and examined the role of school textbooks within the process of implementing the curriculum change into school practice.

The results revealed that teachers' perceptions of curriculum change are neither straightforward nor unified, but are influenced by particular factors and oscillate between the positions of acceptance and resistance. Opposition towards the curriculum change may be fed with insufficient available information about the change, teachers' lack of professional training, and inadequate methodical and didactical support (cf. GITLIN & MARGONIS, 1995). The most influential factors of curriculum change perception were teachers' individual professional biographies (e.g. length of teaching experience and position in the school organizational structure) and their knowledge about the nature of the curriculum change, as well as school-determined factors (working conditions and support). Teachers' perceptions of the curriculum change were underlain by barriers experienced, which were related predominately to emotional constraints and organizational changes such as work overload. In this sense, WALLACE and PRIESTLY (2011, 360) indicated that individual teachers differently handle cognitive activities and interpretations, which come out as diverse understandings of policy messages. Therefore, the authors highlighted

the importance of social interaction among teachers and collectives in a school during the curriculum change implementation. Moreover, according to VÄHÄSANTANEN and ETELÄPELTO (2011), different ways of engaging with the change are necessary to contribute to a shift in teachers' work and exercise practices.

Concerning teachers' use of textbooks within the process of curriculum change implementation, the results showed that school textbooks are still perceived as a key curricular and instructional tool by teachers. However, as found in our review, in some cases, the curriculum goals transmitted by textbooks are not transferred adequately into teaching practice. It was found that teachers prefer concrete descriptions of how to enact innovated curricula in their textbooks. In this regard, teacher guides were considered as particularly useful. The results revealed that the most restraining factor in terms of teachers' use of textbooks as a tool during the implementation of innovated curricula was the lack of related PCK. In terms of the role of textbooks, the analysed research studies suggest that school textbooks should provide teachers with opportunities to develop their content knowledge and to consider alternative representations related to the mediation of the innovated curriculum content. In general, following these suggestions could influence teachers'

commitment to implement the changes of curriculum and to deal with the reform-based textbooks and other educational materials (MANOUCHEHRI & GOODMAN, 2000).

Based on the findings of this study, recommendations for improving the teachers' experience with curriculum change could be inferred. As PCK plays a significant role in teachers' decisions about the innovated curriculum and its implementation, further professional training and development should be provided to teachers. It could be considered as creating opportunities which would allow teachers to share their practice and cope with concerns related to curriculum change implementation. The teachers would then be better prepared for making use of proposed curriculum innovations (cf. SCHNEIDER, KRAJCIK & BLUMENFELD, 2005; RODRÍGUEZ & MESA, 2012). In more specific terms, opportunities for professional development tailored to teachers' experience (preservice, novice, and experienced teachers) could help teachers enact the curriculum change in congruence with the curriculum makers' intents as well as according to the conditions prevailing in their school (cf. SCHNEIDER & KRAJCIK, 2002; HUIZINGA, HANDELZALTS, NIEVEEN & VOOGT, 2014). In particular, less experienced teachers would have more chances to become familiar with the deployment of textbooks as tools for supporting curriculum change implementation (GROSSMAN & THOMPSON, 2008).

The limitations of our study are tied to the research method chosen. The study was conducted as a review interrelating between two research domains which are usually analysed separately. Although the approach proved to be promising and produced sound findings, its foundations are innovative, and

thus yet rather shallowly grounded. Another constraint is related to the aptness of the research sample. There is considerable number of studies related to the issue of teachers' perceptions of curriculum change and its implementation in general; however, the number of studies elaborating on the issue of teachers' use of textbooks while implementing curriculum change is rather scarce. Moreover, the studies available often rely on qualitative methodology. The discovered findings can be therefore generalized only in a limited manner. Our suggestion for further research is to promote the use of mixed-method design, bringing in innovative methodological procedures and interweaving both research concepts, which would enable a comprehensive view on the issue of textbook significance and its use during curriculum implementation. Furthermore, research on teachers' needs for support when implementing innovated curriculum (from the organizational, socio-cultural, and professional development perspectives) would be particularly beneficial for the successful transfer of knowledge and information among teachers, curriculum policy makers, and textbook authors.

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